provided which should do for the United Kingdom that which the Reichsanstalt did for Germany, and that which, so far as its inadequate endowment would allow, Kew had attempted to do for England. The third group of investigations which they wished to undertake was also carried out in the Reichsanstalt—namely, the systematic measurements on the physical properties of various bodies, which would hereafter be data of the greatest importance, both for science and industry. There was no provision whatever for meeting this want in the United Kingdom. They thought the best plan would be to enlarge the Kew Observatory so that the work carried on there might become more nearly equivalent to that undertaken at the Reichsanstalt. The government of the enlarged observatory might be in the hands of a committee appointed by the Royal Society, or a body like the visitors of the Greenwich Observatory, appointed by the principal societies which represented science and industry. They asked for some £30,000 for buildings, and £5000 per annum.

Lord Rayleigh said the enormous sums which were being devoted in Germany in aid of science was a matter which was constantly being brought home to the scientific world; and he could not but feel that unless this country made some effort in the same direction there was very serious danger indeed that we might fall hopelessly in arrear.

Sir Douglas Galton said the assistance they asked for was only a supplement to the policy which the Government adopted a few years ago with the object of promoting technical education.

Mr. J. Wolfe Barry said he felt very strongly that every branch of applied science was greatly in want of such help to its development as would be given by the establishment of a scientific laboratory of research.

Sir Andrew Noble also supported the petition.

Lord Salisbury, in reply, said:—I have listened with very great interest to a subject which certainly is not second in interest to any that I know of, and which has been developed by persons fitter than any others, probably, in this country to expound it. It differs in some respects from deputations that we often have to receive in that it hardly deals with any controverted matter. It is often the duty of a deputation to impress upon a Minister a policy of whose general expediency he is not entirely convinced, and the deputation may take a controversial form. No such development is possible in this case. We are all of us, as we all must be—anybody who has looked into the subject at all—heartily anxious for the attainment of the objects which you advocate so far as they are practicable. But, of course, such a question as you have laid before us to-day depends not for its acceptance upon those wide conceptions of public utility that you have explained; it rather depends upon the narrower issue of finance, for there is surely no Chancellor of the Exchequer in this country who, if he was possessed of a bottomless purse, would not send you out of the room with the concession of everything in this respect that you could desire. The question is as to the furnishing of the means. And there I am afraid I am not able to give you anything like a final or a conclusive answer. I had hoped that the Chancellor of the Exchequer would have been here himself, but he has been forced to take the chair at a very important committee from which it was impossible for him to absent himself, and my courage is not equal to pledging him in his absence. I can only be quite certain that his sympathy is heartily with you, and that he would be very anxious to give such effect to the objects that you have in view as it is in his power to do. I do not think that the exertion which you require from him is quite of the limited kind which has been represented. Prof. Rücker was very moderate in his expressions, but he omitted some very important words in laying his estimate before you which he has printed in the document that he has circulated. He told you that the grant would be £30,000 for buildings, and £5000 a year. But what is said here? "It is thought that at first a grant of £30,000 for buildings and an annual grant of £5000 a year might meet the more urgent necessities of the case." Those are very terrible words to a Chancellor of the Exchequer. They hold out to him indefinite prospects of controversy, in which he himself is not made to play the most agreeable part. I never was a Chancellor of the Exchequer, but I should imagine he would look upon a deputation of this kind, not only from the high philanthropic and patriotic point of view from which he desires to regard it, but also rather as a body of men employed in contriving instruments of torture for himself. Therefore, I must reserve anything I have to say so far as the effect of those figures on his mind may go. But there is one consideration which pressed itself upon me when I read these papers, and still more when I was listening to the interesting speeches that we have heard, and that is, that the kind of security that the Chancellor of the Exchequer would probably want is not assurances of moderation upon your part, which, even if they bind yourselves, will not bind your successors; but some limitation of scope and area in the kind of assistance that you desire from him, which shall prevent, or which shall destroy, that vista of growing and unlimited expense which a Chancellor of the Exchequer is apt to associate with all great national movements of this kind. I have known movements begin with very modest thousands, and end with millions at last. There is a distinction in the objects which you seek, on which I should think it was worth while for you to lay some emphasis. So far as you are inviting the Chancellor of the Exchequer to contribute to an institution for general research, though there can be no question of the value of your objects or of their importance to the public weal, yet you will readily admit that research into the secrets of nature affords a horizon to which there is no end or bound; and he may well be startled at the commencement of a new chapter in the Estimates of whose closing periods he cannot form any conception. But there is one duty of the State which it has to perform in every age, and which it ought to perform now and to perform in increasing ratio as the demands upon it are increased by the widening aspect of science—I mean, if I may use a very grotesque word, which has been very happily used before by the authors of this paper, that the duty of standardising is a duty which the State has always performed—it is nothing but a standard institution. Sir Douglas Galton observed that the stopping of adulteration was really nothing but another form of applying a standard; and so it is in weights and measures and many other respects; and part of what you ask is really standardising, is really to furnish good standards and to furnish a means of ascertaining that the instruments are adapted to those standards and bear a proper relation to them. If the more limited work of standardising was pressed upon the State and the more extensive portion of your work, which involves general and unlimited research, was reserved—for the present, at all events—to such assistance as you might get from private munificence, I think we should have more chance of making a satisfactory beginning. This is, however, only a suggestion. I observed that all the speakers dwelt upon the enormous magnitude of the task that was before us, and I have no doubt they represented accurately not only the facts of the case, but the impression that was made on their own minds. But, still, I think in dwelling on those considerations they hardly displayed the wisdom of the serpent. It is not the magnitude of the task on which it is desirable to lay stress; it is on the importance of those portions of the task which lay immediately to your hand and on their germaneness to the duties which the State has always acknowledged and has hitherto to a great extent undertaken. In the hope that it may be found possible in the greatest possible measure to concede to you the objects which you have in view, but without attempting to pledge the bearer of the purse to the extent to which that purse would be opened, I have only to thank you heartily for your presence here to-day and for the very interesting speeches which I have heard.

Lord Lister thanked the Prime Minister for his kind reception, and the interview then terminated.

NOTES.

The object of the strong and representative deputation which waited upon Lord Salisbury on Tuesday claims the support of all who are interested in the progress of science and industry. We reprint the *Times* report of what took place at this important meeting, and shall return to the subject next week.

M. Gaillot has been appointed sub-director of the Paris Observatory, in succession to M. Loewy, who is now Director.

Dr. Yersin, who is now in Bombay, inoculating against the plague, has been made an Officer of the Legion of Honour.

M. SEBERT has been elected a member of the Section de Mécanique of the Paris Academy of Sciences, in succession to the late M. Resal.

A NEW research laboratory is to be erected in the Botanic Garden at Buitenzorg, Java, towards the expense of which the Government of Holland has allowed 6000 dols.

THE first portion of the great museum building of the Brooklyn Institute, being the wing of which the corner-stone was laid in December 1895, will be completed about the middle of March.

THE American scheme for a laboratory for botanical research in the Tropics appears to be assuming a definite shape, Prof. MacDougal having undertaken the duty of organising the Commission which shall visit various localities for the purpose of selecting a site. In a letter in the *Botanical Gazette* for January, Prof. Humphreys, of the Johns Hopkins University, advocates the claims of Jamaica, where there are already two botanic gardens, at Castleton and Gordon-Town, and where the Governor, Sir Henry Blake, is interested in biological science.

WE have received a second paper by Dr. P. Zeeman, "On the influence of magnetism on the nature of the light emitted by a substance." But, with the exception of some theoretical speculations, it does not give much additional information on the experimental discovery announced in the preliminary notice, a translation of which appeared in our columns last week. The paper confirms, however, the main fact, that a sodium flame placed between the poles of a magnet shows a widening of the D lines equal to about one-fortieth of the distance between them. When examined by a Rowland grating, the edges of the widened lines are found to emit circularly polarised light, the direction of rotation being opposite on the two sides.

THE Edouard Mailly prize has just been awarded by the Brussels Academy of Sciences for the first time. It was founded by the late M. Mailly, and amounts to 1000 francs, to be given every fourth year to the person or persons who have most assisted in the extension of astronomical knowledge in Belgium. The first award has been made to the editorial committee of *Ciel et Terre*, viz. MM. C. Lagrange, E. Lagrange, A. Lancaster, L. Niesten, W. Prinz, and P. Stroobant.

THE President of the French Republic visited the Pasteur Institute on February 10, and Dr. Roux was able to show him cultivations of the plague microbe. In the course of his remarks to the President, Dr. Roux observed that the microbe has little power of resistance, and is easily destroyed by antiseptics and by a temperature of 140°. He pointed out, however, that the plague bacillus had the power of retaining its vitality in the soil, and it is on account of this property that epidemics favoured by dense population and insanitary surroundings are perpetuated in Eastern countries.

ACCORDING to the Rome correspondent of the *British Medical Journal*, there appears to be no doubt that Dr. Giuseppe Sanarelli has discovered the bacillus of yellow fever. He will publish an account of his discovery in the next number of a leading Italian hygienic publication, which will be issued in the course of the next few weeks. *La Nazione*, of Florence, has published an article, sent by a correspondent in Montevideo, which states that for some little time Sanarelli hardly believed in his success, but in August his experiments were so clear that he was certain of the discovery of the microbe, and he then occupied himself with the preparation of the serum. His experiments were very extensive; he vaccinated more than 2000 animals, including rabbits, goats, sheep, monkeys, and a few horses. The results of the treatment are definitely reassuring, and in October 1896 he decided to announce confidentially to the President of the Republic of Uruguay the results that have crowned his studies in the origin and cure of yellow fever. If this remedy be truly efficacious, Dr. Sanarelli will obtain the reward of 150,000 scudi (£30,000) offered by the Brazilian Government for the discovery of such a remedy.

SIR H. TRUEMAN WOOD will read a paper upon the "Reproduction of Colour by Photographic Methods," at the Society of Arts on Wednesday next, February 24. The paper will have special reference to M. Chassagne's process of photography in colours, described in NATURE of February 4, and results obtained by this and other processes will be shown.

The Council of the Royal Photographic Society of Great Britain have awarded the Progress medal of the Society to Prof. Lippmann, for his discovery of the process of producing photographs in natural colours by the interference method. The rules by which this medal is given preclude the award of more than one in any year, and since its institution in 1878 ten medals only, including the one mentioned above, have been awarded.

AN interesting paper was read on Thursday last, by Prof. J. C. Bose, at the Indian Section of the Society of Arts, on the promotion of advanced study of physical science in India. The lecturer made some valuable suggestions for the encouragement of original research in India, among which may be mentioned the establishment of post-graduate scholarships and fellowships by Indian Universities. One of the great drawbacks in the prosecution of physical research in India is the want of suitable laboratories. It is to be hoped that this vital want, which stands in the way of original investigations in science, will soon be removed. Scientific men in Europe are greatly interested in the recent contributions to science made by India, and they welcome Indian investigators as their co-workers in advancing natural knowledge.

FROM the *Gardener's Chronicle* we learn with regret that Baron Constantin Ettingshausen, the palæontologist and botanist, has died at Graz, at the age of seventy-one. Deceased was originally a doctor of medicine, but devoted all his time and energies to botany and palæontology. He was engaged for some time in arranging palæontological collections in the British Museum (Natural History). He was the author of several works on botanical subjects, and wrote a large number of papers, which were published in the *Proceedings* of the Royal Society, and of other learned bodies.

WE notice also with regret the announcement of the death, at Headington, near Oxford, of Mr. Henry Boswell, the eminent bryologist. Mr. Boswell had not only studied the mosses of Britain, but had an intimate acquaintance with foreign species, and his knowledge was utilised by many correspondents in different parts of the world. In his early days his attention was directed to the study of flowering plants, but subsequently he developed a greater fondness for the study of bryology. He possessed a large collection of mosses, which it is hoped will be secured by the University. In recognition of his services to bryological science, Oxford University, in 1887, conferred upon him the honorary degree of Master of Arts.

THE following are among the announcements of the deaths of men of science abroad:—Dr. Nikolai Zdekauer, St. Petersburg, member of the Imperial Academy of Sciences, and distinguished for his work to advance hygiene and the knowledge of epidemics; Herr Alois Rogenhofer, formerly curator of the Imperial Natural History Museum in Vienna; Dr. Hermann von Noerdlinger, formerly professor of forestry in Tübingen University; and Dr. G. D. E. Weyer, professor of mathematics and astronomy in Kiel University.

WE are sorry to see the announcement in the *Times* that Prof. Charles Tomlinson, F.R.S., a successful and distinguished teacher and writer in both science and literature, died on Monday, at his residence in Highgate, in his eighty-ninth year. He was elected on the Council of the British Association for the Advancement of Science in 1864, a Fellow of the Royal Society in 1867, a Fellow of the Chemical Society in the same year, and was one of the founders of the Physical Society. He was for many years Lecturer on Experimental Science at King's College, held the Dante Lectureship at University College, 1878–80, and was Examiner in Physics to the Birkbeck Institution. In science he was the author of many handy text-books on natural philosophy, meteorology, and natural history, and contributed numerous papers, the results of original research, to the *Transactions* of the Royal and Chemical Societies. In 1854 he edited "Tomlinson's Cyclopædia of Useful Arts, Mechanical and Chemical, Manufactures, Mining, and Engineering." In biography he wrote the lives of Smeeton, Cuvier, and Linnæus, and the notices of scientific men in "The English Cyclopædia of Biography." In literature he was the author of "The Inferno of Dante, translated into English Tierce Rhyme"; "Herman and Dorothea, translated from the German Hexameters of Goethe into English Hexameters"; "Essays, Old and New"; "The Chess Players' Manual," and many contributions to literary and scientific magazines.

AN announcement, which will arouse a good deal of interest among biologists, was made at a recent meeting of the New York Academy of Sciences. Mr. Bashford Dean reported that he had obtained a fairly complete series of embryos of *Bdellostomum*, including upwards of twenty stages from cleavage to hatching. *Bdellostoma*, as the name is usually written, is a form very closely allied to *Myxine*, the hag-fish, which is abundant off the northern coasts of Europe. Hitherto the development of the Myxinoids, with the exception of one stage of segmentation, has been entirely unknown, though many European zoologists have spent much time and labour in unsuccessful endeavours to obtain material for its investigation. The developing eggs of *Bdellostoma*, which are quite similar to those of *Myxine*, were obtained by Mr. Dean in the course of collecting operations carried on at Puget Sound, California, by a party of zoologists from Columbia University, New York, in the summer of last year. A number of the eggs and larvæ of a form allied to Chimæra were also secured. The results of the study of this material will be of the greatest interest and importance. After the mystery of the reproduction of the eel had been explained by Grassi, there were only two well-marked types of vertebrates whose development still baffled investigation; and the difficulties in these two cases appear to have been at last overcome.

THE first number of the second decade of the *Kew Bulletin of Miscellaneous Information* is almost entirely devoted to a "List of Kew Publications, 1841–1895." It consists of more than eighty pages of titles of independent publications, or of very numerous and important contributions to journals, containing a record of work done either by members of the Kew staff, or by others working in the Gardens, the Herbarium, or the Jodrell Laboratory. In addition to the *Icones Plantarum*, *Botanical Magazine*, and other serials issued from Kew, the list includes all the more important Colonial Floras, such as Bentham's of Australia, Hooker's of New Zealand, Grisebach's of the British West Indies, Seemann's of the Fiji Islands, Baker's of Mauritius, Hooker's of British India, and others; also important monographs, such as Baker's of the Fern-Allies, Bromeliaceæ, and Amaryllideæ, Massee's of the Myxogastres, many of the orders in Martius's *Flora Brasiliensis*, &c. When to this is added such works of first-class importance as Sir W. J. Hooker's "Genera Filicum," Hooker and Bentham's "Genera Plantarum," Hooker's "Himalayan Journals" and "Botany of the *Erebus* and *Terror*," Bentham's "Handbook of the British Flora," Hooker's "Student's Flora," Hemsley's "Handbook of Hardy Trees, Shrubs, and Herbaceous Plants," and, to crown all, the "Index Kewensis," it will be seen that there is some justification for the statement that the list "represents a volume of work which probably is not surpassed by that of any other institution in the world."

We learn from the February *Journal* of the Royal Geographical Society that the first gold medal of the American Geographical Society of New York, the fund for which was given by the late General Cullum, has been awarded to Lieut. Peary, and was presented to the explorer at the recent annual meeting of the Society. Of Mr. Peary's many services to the geography of the Arctic regions, that which is selected as the special ground for the award is his delineation, in 1892, of the coast-line of Greenland and the consequent demonstration of its insular character. Lieut. Peary, after returning thanks for the medal, proceeded to unfold his plan for a new expedition, which is to aim at reaching the North Pole, a plan which has already been endorsed by the New York Society. Having given it as his opinion that the results of recent expeditions serve to show that the only feasible route by which to attain the North Pole is that by Smith Sound and the north-west coast of Greenland, he pointed to the important work to be done in those regions, in addition to the reaching of the Pole. He proposes the raising of sufficient funds to enable the work of the expedition to be continued, if need be, for ten years. It is proposed to go to Sherard Osborn Fjord, or further, in a ship manned by a minimum crew, and—having taken on board *en route* several picked families of Eskimo—the people and stores would be landed, and the ship sent back. During the autumn sledging season he would advance supplies north-eastward along the coast by short and rapid stages, taking advantage also of the brilliant winter moons. The party itself would follow stage by stage, living like the Eskimo in snow-houses, so that in early spring it should have already reached, with the bulk of its supplies, the northern terminus of the North Greenland Archipelago, whence, ice conditions being favourable, a dash for the Pole would be made with the lightest possible equipment, with picked dogs and two of the best Eskimo. Each succeeding summer the ship would attempt to reach the base, whence the series of *caches* already formed at each prominent headland would supply a line of communication with the advanced station.

THE Seismological Committee of the British Association has just sent out a circular inviting co-operation in an endeavour to extend and systematise the observation of earth-movements. The cost of an instrument to record such movements, with photographic material to last one year, is about 50*l*. The first object the Committee has in view is to determine the velocity with which motion is propagated round, or possibly *through*, the earth. To attain this, all that is required from a given station are the times at which various phases of motion are recorded; for which purpose—for the present, at least—it is considered that an instrument recording a single component of horizontal motion will be sufficient. Other results which may be obtained from the proposed observations are numerous. The foci of submarine disturbances, such, for example, as those which from time to time have interfered with telegraph cables, may possibly be determined, and new light thrown upon changes taking place in ocean beds. The records throw light upon certain classes of disturbances now and then noted in magnetometers, and other instruments susceptible to slight movements; whilst local changes of level, some of which may have a diurnal character, may, under certain conditions, become apparent. Persons who are willing and able to participate in the work of obtaining such records, are requested to communicate with the Seismological Committee, British Association, Burlington House, London, W.

WE have received from the National Observatory of Athens the numbers of the *Bulletin Mensuel Seismologique* for August, September, and October last. The number of shocks observed in Greece during these three months are respectively 24, 27, and 24. The majority were very slight, and were felt by only a few persons; but the large number recorded is a good test of the valuable work done by the new Geodynamic Section, which the Director of the Observatory has placed under the charge of Dr. Papavasiliou.

DR. JOHANNES BUCHWALD contributes to the *Mittheilungen von Forschungsreisenden und Gelehrten aus den deutschen Schutzgebieten* a paper on the distribution of plants in West Usambara, from observations made by himself during six months' residence at Muafa, and on three journeys extending over the whole of the neighbouring mountain region. The floras of the plain and mountain districts are dealt with under separate headings, and special attention is devoted to the species which, while properly belonging to the one region, make their way into the other.

A PLAN, on a large scale, of the newly-founded New York Botanical Garden, accompanies the *Bulletin* of the Garden for January. The same number contains also reports of the Committees to which were entrusted the plans for the arrangement of the Gardens and Museum, as well as Prof. Britton's address on Botanic Gardens, given at the last meeting of the American Association, which comprises a slight sketch of the principal botanic gardens of the world.

THE *Botanical Gazette*, the leading botanical journal of the United States, commences the present year with a staff of three editors and thirteen associate-editors, representing the four American Universities of Harvard, Cornell, Michigan, and Missouri, and the following foreign centres:—Geneva, Padua, Berlin, Paris, Tōkyō, Bonn, Cambridge (England), Copenhagen, and Stockholm. The inclusion of Tōkyō in the list is indicative of the great activity of biological studies in Japan. Besides original articles, the *Gazette* has admirable abstracts of important papers published in foreign botanical journals.

A BIBLIOGRAPHY of the published writings of Dr. P. L. Sclater, F.R.S., has been published as *Bulletin* 49 of the U.S. National Museum. Many years ago the publication of a series of bibliographies of representative American naturalists was begun by the Museum, and five bulletins of this type had been published previous to the present one. Though the original intention was to confine the series to the work of naturalists carrying on researches in America, Dr. Sclater has paid so much attention to American ornithology that it was considered most desirable to widen the scope and devote a bulletin to his contributions to the subject. The result of acting upon this decision is a bibliography running into 135 pages, arranged chronologically, and in lists of new families and genera described, new species described, and species figured.

THE meteorological observations made at Rousdon Observatory, Devon, during 1895, and the reduction of observations for the lustrum 1891–95 and the decade 1886–95, are contained in a volume which Mr. Cuthbert E. Peek has just distributed. In addition to the statistical contents, the report contains a valuable account of a comparison of the records of a Kew pattern Robinson anemometer with those of a pressure-tube anemometer. The sum of the mean hourly velocities obtained from the pressure-tube record was compared with the recorded run of the caps of the Robinson anemometer for each month. The results are, on the whole, very consistent, and show that, for almost all velocities, the pressure-tube record amounts to only about eleven-fifteenths of the mileage recorded by the Robinson. In other words, assuming the velocity shown by the pressure-tube to be correct, the factor of the Robinson should be 2·2. Mr. Peek thinks that the true factor of the Kew pattern, or standard size, Robinson anemometer is sufficiently close to 2·2 as to make it safe to accept that value for getting the real velocity of the wind from its records.

A VERY attractive guide to Stockholm, containing numerous illustrations, and useful hints to tourists, has been issued by the Swedish Tourists' Club. The guide should be seen by all who propose to visit the beautiful capital of Sweden during the forthcoming summer, when the great Scandinavian Art and Industry Exhibition will be open.

A GENERAL index to the first fifty volumes of the *Quarterly Journal* of the Geological Society, has been compiled and edited by Mr. L. L. Belinfante, Assistant Secretary of the Society. Part i., comprising the letters from A to L, has just been published. It need hardly be said that the complete index will be of great service to geologists. Another useful publication issued by the Geological Society is the author's and subject index to the geological literature added to the Society's library during last year.

THE first number of *The Middlesex Hospital Journal* has been sent to us, and it is a very creditable production. Among the contents is a paper, by Mr. Henry Morris, on the diagnosis and treatment of stone in the bladder. Referring to the use of Röntgen rays in the diagnosis of renal and vesical calculi, it is shown that calculi compound of uric acid and urates are not likely to be revealed by the rays, especially if the rays have to pass through the adult skeleton to reach them. On the other hand, stones which have phosphates or phosphate or oxalate of lime in their composition can be discovered by Röntgen rays. A portrait of the late Mr. J. W. Hulke, F.R.S., reproduced by the Swan Electric Engraving Company, forms a striking frontispiece to the *Journal.*

THE Museums Association exists for "the promotion of better and more systematic working of museums throughout the kingdom." In order to promote this object, the Association meets in a different town each year. Last year it met at Glasgow, and the report of the proceedings at the meeting, edited by Mr. E. Howarth and H. M. Platnauer, has lately been published by Messrs. Dulau and Co. To curators of museums the volume is invaluable. Among the subjects dealt with in it are type specimens in botanical museums, by Mr. E. M. Holmes; colour tinting and its application to microscopic work, by Dr. G. Bell Todd; descriptive geological labels, by Mr. Herbert Bolton; electrotypes in natural history museums, by Mr. F. A. Bather; chemistry in museums, by Mr. G. W. Ord; and suggestions made by Huxley in 1868 for a proposed natural history museum in Manchester, contributed, with Huxley's original pen and ink sketches, by Mr. W. E. Hoyle.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*, ♂) from India, presented by Miss M. Hewens; a Rhesus Monkey (*Macacus rhesus*, ♀) from India, presented by Mr. C. W. Hutchings; a Yellow-shouldered Hangnest (*Icterus tibialis*) from Brazil, presented by Mr. W. H. St. Quintin; a Ring-tailed Coati (*Nasua rufa*) from South America, deposited; two Painted Frogs (*Discoglossus pictus*), South European, received in exchange; four Varied Field Mice (*Isomys variegatus*), born in the Gardens.